NASA ADVISORY COUNCIL

COMMERCIAL SPACE COMMITTEE

Goddard Space Flight Center

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Public Session

Meeting Report

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Meeting Report Prepared by:
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Commercial Space Committee

Committee Members
Patti Grace Smith, *Chair*
Bernard Harris
Lon Levin
Stephen Oswald
Thomas Rathjen, *Executive Secretary*
Shawanda Robinson, *Administrative Officer*

Guests
Michael Barton, National Academies
Jill Hacker, Zantech IT
Rebecca Jiang, citizen
Francesca Schuler [?]
Christopher Scolese, NASA Goddard

Day 1: July 23

Call to Order and Opening Remarks
Patti Grace Smith, Chair; Thomas W. Rathjen, Executive Secretary

Thomas Rathjen introduced himself and welcomed those present. He thanked Goddard Space Flight Center (GSFC) for hosting the week's meetings. The meeting was open remotely by Web-ex and telecom.

Mr. Rathjen announced that the meeting that day was open to the public. He welcomed participants from the general public, both those in the room and those connected electronically.

Patti Grace Smith thanked committee members, some of whom had gone to great lengths to attend, for being there. She noted that this meeting would include the first formal joint meeting at the request of the chair of the NASA Advisory Committee (NAC). She reported that the NASA Administrator was pleased with the committee's progress and looking forward to more.

Ms. Smith reported that the SpaceX journey to the International Space Station (ISS) was a major achievement, the culmination of a lot of work over a long period of time. That success said a lot about what commitment, tenacity, and determination can produce.

Results of the Recent SpaceX Commercial Orbital Transportation Services Demonstration Mission to International Space Station
Alan Lindenmoyer, Manager, Commercial Orbital Transportation Systems (COTS) Program

Mr. Lindenmoyer said SpaceX's recent flight, the first commercial flight to the ISS, was highly successful. The flight carried 600kg of cargo to the ISS and returned several hundred kg of cargo to Earth, including some research. Astronaut Don Pettit operated the ISS's robotic arm for berthing of the Dragon capsule.

Mr. Lindenmoyer showed a brief video of highlights from the mission.

Mr. Lindenmoyer said that the vehicle's parachute system would be modified once it was being used for human transportation; that on the return trip human flights would target their landing for land rather than water; and that for this flight all equipment used was new but in future there were plans for reusing avionics and some other equipment.

In response to a question, Mr. Lindenmoyer explained that the vehicle is designed to be certified for 6 months plus an extra 45 days on orbit, in preparation for the crew missions. He did not know the answer to

a question from Mr. Oswald about the g-level on the vehicle during its return to Earth; he said he would find out.

Mr. Lindenmoyer said a Space Act agreement (SAA) was a good model to get the work done.

Ms. Smith commented that when the program started, there were lots of reservations on both sides. SpaceX most appreciated Mr. Lindenmoyer, because of his fairness. Mr. Lindenmoyer said the success was attributable to the team, who were open and who listened to the COTS program's lessons learned.

Goddard Space Flight Center's Commercial Space Activities and Plans
Christopher Scolese, Director, GSFC

Ms. Smith introduced Chris Scolese, who became director of GSFC on March 5 of this year.

GSFC has a long history of working with the commercial sector, having been involved in commercial activities for over 30 years. For example, GSFC has worked out "rideshares" with commercial partnerships for their payloads.

The Rapid Spacecraft Development Office (RSDO), which was started in the mid-1990s, allows NASA to take advantage of the capabilities of other organizations to build spacecraft for communication satellites and for Earth observation. Working this way allows NASA to save money, build reliability, and get results sooner.

The procedure is that the Rapid Spacecraft Development Office makes an announcement, businesses propose their spacecraft or capabilities, and NASA, when it has a need, asks companies in the "catalog" to propose. Then NASA chooses the one that best meets the mission characteristics.

In reference to a statement in Mr. Scolese's handout indicating that $750K was returned to GSFC for the use of its facilities, Dr. Harris asked what happened to the returned money. Mr. Scolese was not sure.

Mr. Scolese said NASA owns the technology for the Loral project. Mr. Levin asked if that technology can be used and applied by communications satellites in the future. Mr. Scolese replied that Loral is providing the ride; the technology to go on it is being developed by NASA and is being made available to the broader industry. Information about it gets released to the public. In this case, NASA said they would carry out the mission, Loral offered to provide the ride, and NASA teamed up with them. Other companies could come in. NASA may license the technology in the sense of controlling it, but does not get royalties for its use.

Technology transferred to industry in the past twenty years includes communications activities, laser radar, and global positioning systems (GPS). Technology transfers are not usually exclusive. Mr. Levin asked about the process to make them exclusive; Mr. Scolese said he could have someone talk to Mr. Levin about that.

GSFC's greatest challenge with the commercial space effort has been to overcome the false sense that commercial space is all new to GSFC. GSFC has rich experience in robotics and science and should be building on that and sharing it. Mr. Scolese said there needs to be a discussion about what can be done better commercially. Some things obviously can, and others obviously cannot, be bought off the shelf. It's the in-between part that needs to be discussed.

Space Act Agreements (SAAs) can be used for technologies; GSFC has not used them for RSDO. Mr. Scolese said services are not supposed to be bought under SAAs. An SAA contains no requirements; it is just an agreement to investigate something. Mr. Scolese explained that GSFC gets its launch vehicles through an indefinite delivery indefinite quantity (IDIQ) contract for RSDO that is administered by Kennedy Space Center.

Mr. Levin asked why QuikSCAT has not been replaced. QuikSCAT used to provide very valuable information but is now beyond its design life. Mr. Scolese explained that GSFC provides weather satellites on a reimbursable basis to the National Oceanic and Atmospheric Administration (NOAA). GSFC is working with NOAA to find a way to replace QuikSCAT. Budget-wise the project is in a gray area. It was NASA's Jet Propulsion Laboratory (JPL) that developed QuikSCAT. The plan was for the National Polar-orbiting Operational Environmental Satellite System (NPOESS) to carry much of the load of other missions, but NPOESS, which was making research instruments operational, was discontinued. That made NASA an agent for NOAA. The only research satellite that will be replaced in an operational sense is TRIM, with the Global Precipitation Measurement (GPM) project. After that it will be operational and therefore will no longer be a NASA responsibility.

Acquisition Process Lessons-Learned for the Evolved Expendable Launch Vehicle (EELV) Program
Joe Boyle, Aerospace and Defense Consultant, by telecom

Mr. Boyle emphasized that different contract types are appropriate to different situations. Important questions are who is going to be responsible for the cost of performance – contractor or government – and how much profit incentive is offered.

Contracts may be fixed price or cost plus.

- For a firm fixed price contract, price is negotiated and settled at the start. To change any requirements, the government must reopen the contract. The contractor's incentive is to work efficiently so they can maximize their profit. If there is competition, the contractor is motivated to bid a low price. All the financial risk is on the contractor's part. This kind of contract is appropriate when the government knows exactly what it wants.

- For a cost plus contract, the government lets the contractor know the requirements as the project progresses, and is willing to pay what that costs. The contractor must have an accounting system that is adequate to provide cost data in the way in which it is needed by the government. The Federal Acquisition Regulations (FAR) prohibit using cost contracts to buy commercial items. Cost-plus contracts require a substantial management effort on customer's part.

- A cost-plus contract may contain fixed-price items.

A fixed price incentive contract allows the contractor to share in the benefits of cost control, and thus incentivizes the contractor to control costs. Incentives offered could be extra fee for launching early, a penalty for launching late, zero fee for launch failure, or requiring the contractor to pay for the next launch vehicle after a launch failure. The amount of incentive fee might be 10 – 15%; it is up to the government to decide. Mr. Levin said that in the satellite business incentive fee is 10 – 20%. He said the incentive fee system does work; companies make a good amount of money that way.

Mr. Boyle emphasized that the government needs to have a good sense of what the baseline cost should be in order to pay appropriate costs.

In a cost-sharing contract, government and contractors negotiate which parts of the work will be reimbursed. This kind of contract is normally associated not with launch, but with development. Developers may want to break in a market and therefore may be willing to share costs. Cost sharing can be accomplished under a fixed price contract, but only in a limited way; it would be negotiated around incentive amounts. Mr. Boyle explained that a share line arrangement, in which money saved by the contractor is shared with the government, is profit sharing more than cost sharing, but it **could** work for costs.

Mr. Rathjen noted that in NASA's work to date in commercial programs – COTS and the first two rounds of commercial crew – work was done under agreements; partners as well as NASA invested resources. Although these agreements were not contracts, the arrangement was like a fixed-cost mechanism with cost sharing.

Mr. Oswald noted that in the EELV project the price structure was based on the launch rate. Two contractors, Boeing and Lockheed, invested a lot of their own money so they could get into the market – and then the market went away. Contractors need assurance from the government about the assumptions they can make for the business case. Mr. Boyle agreed. Mr. Levin asked what would have been best mechanism under the circumstances. Mr. Boyle said the mechanism used was fixed-price and that was appropriate. The problem was that the contractors did not know the market; if they had, the prices would have been higher and they would not have lost money. Mr. Oswald commented that bidders need to consider the market not just until 2025 but until 2040; in other words, Mr. Levin said, there will be a market eventually, but not necessarily a big market in the short term.

Mr. Boyle explained that the original plan for EELV was to down-select to one bidder after a review. But then the government did not want to pay the price for the EMD review; it could better afford two contractors. Mr. Oswald suggested that it was also because the people making decisions were veterans of Challenger and Atlas that two contractors were selected. Mr. Boyle agreed.

Mr. Levin asked, if there had been a model where the government had guaranteed a certain amount of work, or had promised to cover costs to keep the contractor going for five years, would that have been better? Dr. Harris said that is what NASA is doing now. Mr. Boyle asked, if NASA guarantees a basic market based on the national launch forecast, does NASA really have a good handle on a cost, and is that an acceptable cost?

Dr. Harris asked how government's involvement in the satellite industry in the 1970s had been justified; was there a business case? Mr. Levin answered that the market was too risky. There was very direct government involvement. The government understood that over decades there would be a commercial sector. The government and commercial sectors fought each other. Dr. Harris said the business case for commercial space cannot be justified, but the industry can be. Ms. Smith said the Nation has an interest in maintaining a launch industry. Mr. Oswald said the approach needs to be that NASA will help the contractors because there is business for NASA in space; government help is necessary because of the liability involved and because the government deliberately makes it hard for a contractor to make much money,

Mr. Boyle said "NSPD 40", a fact sheet on U.S. space transportation policy, spoke to this. There had been a debate about who would pay for the infrastructure. He suggested that rather than grudgingly trying to get the best price, NASA should consider allowing companies to price on the margin for commercial vehicles so that they can grow their business.

Mr. Oswald pointed out that small companies may not have accounting systems that comply with government cost accounting standards (CAS). He said initial contracts would need to be cost plus, but later ones could be fixed price, as is the case with buying airplanes. Mr. Boyle suggested that the vehicles needed for spaceflight missions vary much more than do airplanes. Mr. Levin suggested that the variability be defined, so that some part could be done fixed price and some cost plus. Mr. Boyle said that is a possibility. Another possibility is fixed cost plus.

Deliberations on Findings and Recommendations
Committee

The committee turned to deliberations on findings and recommendations that members had drafted.

Ms. Smith explained that the NAC chair had decided that NAC would not submit observations anymore, just findings and recommendations. Anything the committee sends to the NAC should be actionable. She proposed that the committee come to consensus on the substance and most of the wording of each item but leave the final editorial work to Mr. Rathjen and her.

The first item was a finding, proposed by Will Trafton, that "Kennedy Space Center is leading the way for other NASA space centers in modeling how to gain acceptance by its employees and contractors of commercial space policy." The draft finding also cited a planning document from the director level.

Ms. Smith said she hadn't been sure Kennedy was leading the way, but the planning document justifies the statement. Mr. Rathjen asked if the statement needed to be qualified, since there were still three centers from which the committee had not heard. Mr. Levin resolved the issue by suggesting the wording "Of all the centers we've talked to, Kennedy has the best model."

The second item concerned access to draft legislation. Dr. Harris had proposed "This committee wants the opportunity to review the drafts to provide relevant information for the committee's deliberations for NASA's concerns regarding current and possible future legislation."
Ms. Smith said if there is no action on this item, the Committee may not know about pending legislation and therefore cannot help provide advice to the Agency about it.

The Committee agreed on final content for this recommendation to take forward.

The third item was Mr. Levin's recommendation that NASA should align its technology development priorities with the needs of the commercial space industry. Ms. Smith questioned what that meant and whether it is doable. She had assumed the Committee would identify technologies and list those they could support. Mr. Levin suggested that it is not up to the Committee to create a list; rather, the committee should find a way for NASA to develop a strategic technology investment plan with commercial benefits. NASA should be talking to industry about that. Ms. Smith suggested the wording "In developing NASA's strategic space technology investment plan, NASA should . . . ensure that it collaborates with [name entities, such as industry organizations]."

Mr. Oswald suggested adding something about considering future needs. It is about getting there better, cheaper, faster. Mr. Levin agreed but explained that by "needs of the commercial space industry" he had meant what the industry could make money from. Ms. Smith said Mr. Oswald's suggested wording accomplished that. Mr. Rathjen suggested the wording "ensure that it considers the future needs of the commercial space industry" for the recommendation and "there will be a missed opportunity to reduce total costs" for the consequence of not carrying out the recommendation. Mr. Oswald suggested replacing "reduce total costs" with "reduce future launch costs and/or improve performance." Mr. Rathjen suggested "reduce future costs." Final content for this recommendation to take forward was agreed to.

The fourth item drafted by Mr. Oswald concerned the size of the Commercial Crew Program's workforce. . Ms. Smith suggested taking out the word "leaning" and, after "innovation," adding "will be aided by this recommendation." Someone suggested, adding "and create unintended consequences that should be avoided in the interest of reducing cost" after "program."

There were no objections to these changes, and content to take forward was agreed to.

The next item was a recommendation proposed by Mr. Oswald to consider commercial space needs in NASA's human capital planning. Some wording changes were discussed, and final content to take forward was agreed upon.

The final recommendation was drafted by Mr. Levin. Working from Ms. Smith's mark-up, he suggested the wording "The Committee recommends that the Agency develop a process that allows NASA centers to promote their opportunities for public use of capabilities without negative ramifications." Mr. Levin explained that by promoting public use of its capabilities, a government body could create the impression that it has excess capacity and thus might invite budget cuts; the risk of these cuts is what he meant by "negative ramifications." Mr. Oswald added that the center would not even get the benefit of commercial use, because payment for outside use of the Centers does not go to the centers. He proposed changing that and let the Centers keep the income so that they would have an incentive to maximize it. Mr. Levin agreed, saying this recommendation should both protect the centers from getting punished for allowing commercial use and allow the centers to make money, even if that requires a legislative shift. As it is, there is no upside for a center director to allow commercial use of the center's facilities. Mr. Rathjen explained that under a Space Act agreement, the partner's payment does go to reimburse costs incurred by the NASA center; therefore the center does keep the payment. That payment helps to keep the facility and the workforce going. Ms. Smith and Mr. Levin, and suggested "use of capabilities without concern that they are highlighting underutilization." Mr. Rathjen suggested "negative ramifications of highlighting underutilization." Final content for this recommendation to take forward was agreed upon.

Ms. Smith proposed considering a future recommendation to "assess whether duplication of capabilities and facilities across NASA centers exists." Although there have been earlier efforts to find duplication, Mr. Rathjen commented that the results of those studies are difficult to interpret, because the situation is dynamic. He said that to his knowledge the commercial space offices had not been deeply involved in the exercises that had been done to right-size facilities. He suggested a briefing for the Committee by a representative of that institutional area, someone who could talk about opportunities for commercial partners.

Mr. Levin proposed a future recommendation that NASA do an industry survey of what NASA facilities the industry will need in the future, and how to structure the relationship so that money is sent back to NASA to keep those facilities going. Mr. Oswald proposed the wording "NASA should take advantage of opportunity in this transition to commercial space to reevaluate the worthiness of various institutions." Ms. Smith pointed out that some facilities may be obsolete and may need to be shut down, or they may need to be consolidated. Mr. Levin summarized: NASA has facilities; a transition to industry is coming; take advantage of what exists; all options are on the table. Mr. Rathjen suggested that he or Ms. Smith assign someone to write a recommendation on the issue, and then the Committee would discuss it. Ms. Smith suggested putting it at the top of the Committee's list going forward.

There was a discussion about the use of SAAs versus contract vehicles. Mr. Rathjen explained that SAAs cannot be used to obtain services or products; SAA's are a way NASA can partner with industry. For the big SAAs, like commercial crew and COTS, NASA hopes that a capability evolves from the work and NASA can eventually purchase the product. Because an SAA is not a contract, the FAR does not apply to it. An SAA is not prescriptive. Some SAAs are unfunded.

Public Comments

Mr. Rathjen asked for comments from the two members of the public who were present as well as from anyone who might be participating on line. Michael Barton, an intern with the National Research Council, thanked Committee members for their hard work.

The meeting adjourned for the day at 5 pm. Ms. Smith thanked everyone for participating.

Day 2: July 24

Joint Meeting with the Human Exploration and Operations Committee and the Audit, Finance, and Analysis Committee

Commercial Orbital Transportation Services/Commercial Crew Development
Phil McAlister, Director, Commercial Space Development, by telecom

Phil McAlister discussed the status of Commercial Cargo, Commercial Crew Development Round 2 (CCDev2), and the acquisition strategy and Commercial Crew Integrated Capability (CCiCap).

Mr. McAlister said the recent SpaceX flight was very successful, accomplishing all of its 33 objectives. He gave credit to the SpaceX team, the COTS team, and the ISS.

Mr. McAlister stated CCP's formal objective: "to facilitate the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable, and cost effective access to and from low Earth orbit and the International Space Station." In this time of tight budgets, he said, CCP may be able to change the cost equation. He explained that the amount allocated to each funded partner in CCDev2 was determined on the basis of the company's proposal. The rationale for each amount is explained in a source selection statement, which he could provide upon request.

Under Space Act agreements, NASA dictates only high-level objectives; how to achieve those objectives is left up to the partners. Mr. Bohdan Bejmuk pointed out a possible conflict between dictating only high-level objectives and requiring a human rating certification. Mr. McAlister replied that NASA is aware of this inconsistency and has moved away somewhat from only high-level objectives: NASA now dictates some safety requirements, but leaves it up to the partner to determine how to meet those. Mr. Bejmuk also cautioned that a human rating requirement introduced late in the process will not be met. Mr. McAlister agreed and said human rating requirements are available for contractors to see. Still, NASA is the ultimate arbiter of whether the partner is meeting a requirement, and may not agree with a partner's assessment of whether it meets the requirement.

Mr. Bejmuk pointed out that NASA needs a method to verify that the vehicle meets all requirements. Mr. McAlister agreed and explained that to certify vehicles NASA does detailed reviews, some lasting two to three days, including demonstration activities, with people embedded with companies, working on their shop floors.

Mr. McAlister explained that the plan is to award an SAA through ICAP in July or August of this year, and then request proposals for more than one FAR-based certification contract, hopefully to be awarded early in calendar year 2013. The agreement and the contracts would run in parallel.

Robert Hanisee, of the Audit and Finance Committee, noted that there are four funded competitors and three unfunded ones. With the ISS scheduled for deactivation in 2020, if CCP becomes operable in 2017 as planned, he asked if the companies would have a chance to recoup their costs. Mr. McAlister pointed out that according to policy the ISS is not really scheduled for deactivation; it will operate until 2020, and potentially beyond. Further, partners can also serve the non-NASA market for low Earth orbit (LEO); they can recoup some costs there. He noted that NASA can make up to two full awards and one partial award for ICAP; to save money in the long run, NASA wants to retain the benefit of competition as long as possible.

Richard Kohrs and Tommy Holloway questioned whether the proposed schedule, with its first flights expected in 2017, can be met in light of budget uncertainties. Mr. McAlister said he thought it could, even if the FY2013 budget is about $500M rather than the requested $830M. But that is not certain.

Mr. Holloway commented that to certify a vehicle requires a verification testing program to test the components on the ground and then a limited flight test program. Mr. McAlister replied that that is what is planned; it will be done under a FAR-based contract.

In response to a question, Mr. McAlister stated that the program has not yet determined whether the certification for parts will be at the subsystem level or the total vehicle level. He said he would talk to the committees about that at a later date.

Ms. Smith said the Commercial Space Committee appreciates how NASA is approaching the SAAs for development phase and contracts for the certification phase.

Overview of Contracting Options
Bill McNally, Assistant Administrator for Procurement, by telecom

Mr. McNally discussed how to choose the right contract type to meet requirements with reasonable risk and create incentive for efficient and economical performance.

Mr. McNally explained that for a cost plus award fee contract, evaluation considers performance conditions, for which there may be no clear measures in the contract; this makes performance hard to evaluate objectively. An incentive arrangement, on the other hand, allocates fee based on objective measures. Mr. Holloway explained that with a fixed fee arrangement, the up-front cost will be more and the contractor has an incentive to cut costs. With a cost plus contract, the contractor is motivated to do a good job.

Mr. McNally said NASA is considering how many seats to make available to get the best prices from industry. Mr. Bejmuk suggested extending the ISS's life as much as possible to bring down the cost of a seat. He also suggested that NASA establish a policy for access of tourists to the ISS via commercial spacecraft. This could motivate contractors, because they could make money by selling seats. If NASA does not do it, the Russians will.

Discussion
Jeff Steinhoff, of the Audit, Finance, and Analysis Committee, spoke to the issue of using a fixed price contract to avoid accounting issues. Under a fixed price contract structure, the contractor would not have to have a government-compliant accounting system. However, advisory services like the research and development in this program entail risk. If the contractor is asked for much more than it expects, the contractor will stop work rather than go bankrupt; therefore a firm fixed price contract would not fit the need, and a company that could not account for its cost would be suspect in any case. Ms. Smith commented that the government has very specific accounting rules; a company that is unable to meet these is not necessarily unable to account.

Dr. Stephen P. Condon, from the Human Exploration and Operations Committee, questioned the notion that in a fixed price contract the contractor assumes most of the risk. The contractor does assume the cost risk, but the government risks not getting the product or service it has contracted for. With a fixed-price contract, there is minimum government surveillance, perhaps tempting the contractor into taking shortcuts. Ms. Smith disagreed with the notion of minimal surveillance; surveillance is not minimal, even if it is not as extensive as it was in the past.

Ms. Smith said that in the licensing process the Federal Aviation Administration (FAA), an agency that was totally FAR-based, was able to come up with performance-based regulations to replace the prescriptive ones. Under these rules, if a company can demonstrate that it meets the intent of a requirement, it will be considered.

Richard Malow, with the Human Exploration and Operations Committee, gave two examples of work at the cutting edge of technology done under fixed-price contracts. In one case the U.S. Navy bought large telescopes under a fixed price contract. The contractor was unable to complete the work for the agreed-upon price, and delivered half-completed telescopes. In the other case the contractor said they had reached

the cost limit before the deliverable was finished, but kept working, absorbed a 40% overrun, and delivered.

James Odom asked who is doing indemnification for casualties for NASA's crew. If, as in the past, NASA carries the indemnification, NASA will need to know the hardware that is carrying its people.

Citing his business experience, Mr. Levin said there is reason for skepticism about these changes, but there is no reason to expect the system to fall apart. There is too little money and the Nation wants people in space. The contractors are businesses. They do their best to comply with requirements. Yes, the government must be clear about requirements early. But the absence of a CAS-compliant accounting system does not reflect poorly on a company; some companies have strong accounting systems that are not government compliant. This is all part of the experiment. NASA does not have much money and NASA has done low-Earth orbit before. In this context, what NASA has come up with makes sense. Ms. Smith talked about FAA's experience with safety regulations and requirements. At one time there were about 11 documents of Air Force requirements launch companies have to comply with, making it very difficult and cumbersome, most especially for new entrants. FAA and the U.S Air Force put teams together and successfully developed one set of common safety standards. There is movement toward a new world, one no less safe, with commercial companies providing the service.

Mr. Holloway commented that he would not propose NASA's current bureaucratic system to develop and build a shuttle. The Space Act allows companies to build a vehicle in their own way, but only with enough surveillance and insight and testing so that NASA can commit its people to the system. NASA may not yet have figured out how to do that.

Mr. Oswald emphasized the importance of choosing the contract methodology that is most likely to be successful in the end. Flight safety certification will be a big deal for small companies, so it should be done under a reimbursable kind of contract.

Mr. Bejmuk cautioned that Mr. McAlister's budget is usually about 40% less than his request. The shortfall may cause a delay, so what is planned for 2017 may not take place until 2020. If that happens, there may not be much of a business case. Mr. Levin commented that companies are putting their own money in to accelerate the program. They have their own motivation to keep to a schedule; they will carry other payloads. Farther out, the companies will not depend so much on money from Congress, and not getting that money will not slow them down as much as it may do now.

Mr. Holloway suggested that the problem is not what kind of contract one ought to have, but how to use one kind of contract and still get the benefits of the other kind. Mr. Levin agreed. Ms. Smith said the rubber meets the road with the appropriators and the present challenging budget environment is likely to remain.

The joint meeting adjourned to separate committees.

CSC Meeting

Ms. Smith, Mr. Oswald, and Mr. Rathjen were present.

The Committee discussed potential future findings and recommendations:

Regarding a potential recommendation regarding the SAA process, Mr. Oswald commented that the use of SAAs makes it unnecessary to consider the more onerous parts of the FAR, including the CAS accounting system. Mr. Rathjen explained that the work in an SAA must be for public purpose, rather than for government service. Cargo and crew could not be handled by an SAA. The SAA process takes a long time

because of the legal consultations required. He suggested a recommendation capturing that. Ms. Smith replied that that could be described as a finding or recommendation about concerns of the centers. Perhaps centers could be given authority for certain ones, with HQ review required for others.

Mr. Rathjen said there is not an absolute limit to the dollar value for which centers can contract without approval from Headquarters. Headquarters may be involved in a contract for a small amount if the matter is highly visible or sensitive. Mr. Oswald suggested guidelines that would free up centers to do routine things without involving Headquarters.

Mr. Rathjen suggested asking the new Committee member (Franceska Schroeder, who was appointed late on July 23rd) to draft a recommendation for the next meeting based on these ideas.

There was discussion of a further recommendation regarding facilities. Mr. Rathjen suggested asking someone at the next meeting to give a presentation on facilities NASA-wide. Mr. Oswald suggested a spreadsheet sorted by capability. That would make it easy to see, for example, which of the commercial companies pursuing COTS or CCDev have used which facilities and whether they did testing there. Mr. Rathjen said he would find out if that kind of data is kept. Some information of that kind is proprietary.

Ms. Smith asked what more needed to be said on a candidate recommendation regarding maintaining competition. Mr. Rathjen explained that a recommendation on a particular matter – for example, a specific program – cannot be deliberated on by Committee members with potential conflicts of interest on the matter. Thus, a recommendation such as "the next phase of commercial crew should maintain competition" would be problematic for most members of this Committee. However, a recommendation that "NASA's future commercial space initiatives should continue to include competition" is more general and would not be a problem,

Mr. Oswald asked whether the real recommendation is to maintain multiple contractors to provide competition and reduce risk in the near term. Far into the process, one contractor could be selected. On the other hand, redundancy may be needed throughout a project, in case one contractor fails. Ms. Smith replied that a one-contractor strategy has been rebuffed by NASA. Mr. Rathjen said NASA would prefer to maintain competition and multiple partners all the way into services, if budgets allowed. Mr. Oswald said if competition is not maintained and if the contract is firm fixed price, then the contractor is in a position to tell NASA "Here's the price; if you don't like it, go somewhere else." Whether NASA can afford two providers depends on how much oversight two contracts would entail. Mr. Oswald said the rationale for keeping more than one contractor has to do more with reducing development risk and providing options through the high-risk part of the program than it does with life cycle cost. Whether to keep more than one contractor throughout the life cycle cost can be decided late in the process.

The next candidate recommendation discussed pertained to the Commercial Crew Program's certification strategy. Ms. Smith said that what NASA is calling certification requirements could be "conditions" in a license. Mr. Oswald suggested abandoning the idea of certification to meet the high level requirements, instead maintaining certification as the parts change. Ms. Smith asked whether that is something NASA is even talking about yet. Mr. Oswald said Mr. McAlister had said they were working on it.

Mr. Oswald said the best service the NAC can give the Agency is provide top cover. If the Committee recommends that nothing be done less stringently than it was done for Shuttle, then the Administrator will have to either disregard his advisory council's advice or make the vehicles very expensive. Alternatively the Committee could recommend an approach like used by the commercial sector. People in aviation use a certification system that is affordable for what they are doing. Administrator Bolden could direct NASA to consider how other people certify things that fly and learn from that.

Ms. Smith talked about safety for NASA astronauts versus safety for members of the public who fly. Why is one person more valuable than another? Mr. Rathjen said the Committee's opinion in this matter could be early advice and could impact direction. Mr. Oswald described the culture as "We're all created equal but we're not"; the value of a person with a NASA patch is different from that of one without. He and Ms.

Smith agreed that NASA cannot afford to carry that forward. Ms. Smith raised the example of a company that is looking at flight suits for passengers. People who test safety say such flight suits will not provide the same level of protection and safety as astronauts are used to. Mr. Oswald explained that flight suits are needed only if the cabin loses pressure, which is unlikely. Ms. Smith asked how to plan for the unexpected. What if someone on a flight has a bipolar incident? Mr. Oswald said such things have happened to airline passengers and even to people who have gone through NASA screening. The solution is to build in protections to minimize the damage that anyone is able to do; for example, on an airplane it is a two-step process to remove an emergency door.

The Committee briefly discussed a candidate recommendation suggested earlier by Mr. Levin, regarding using acquisition methods, regardless of type, to get the job done. Ms. Smith asked what the realistic options are. Programs are not getting the money they have requested. The use of cost-plus contracts can increase cost. Mr. Oswald said cost-plus-incentive-fee is not as expensive as either cost–plus-fixed-fee or cost-plus-award-fee, and it does not incur the risk of the contractor quitting, as fixed-fee does.

Adjournment
Mr. Rathjen adjourned the meeting at 2 pm.